

1.7 Solving Absolute Value Inequalities

$<$ - less than = "and"

$>$ - greater than = "or"

$$-\frac{9}{2} \leq x \leq 3$$

Ex 1: Solve and Graph: $|3 + 4x| \leq 15$

$$\begin{array}{r} 3+4x \leq 15 \\ -3 \quad -3 \\ \hline 4x \leq 12 \\ \frac{4x}{4} \leq \frac{12}{4} \\ x \leq 3 \end{array}$$

AND

$$\begin{array}{r} 3+4x \geq -15 \\ -3 \quad -3 \\ \hline 4x \geq -18 \\ \frac{4x}{4} \geq \frac{-18}{4} \\ x \geq -\frac{9}{2} \end{array}$$

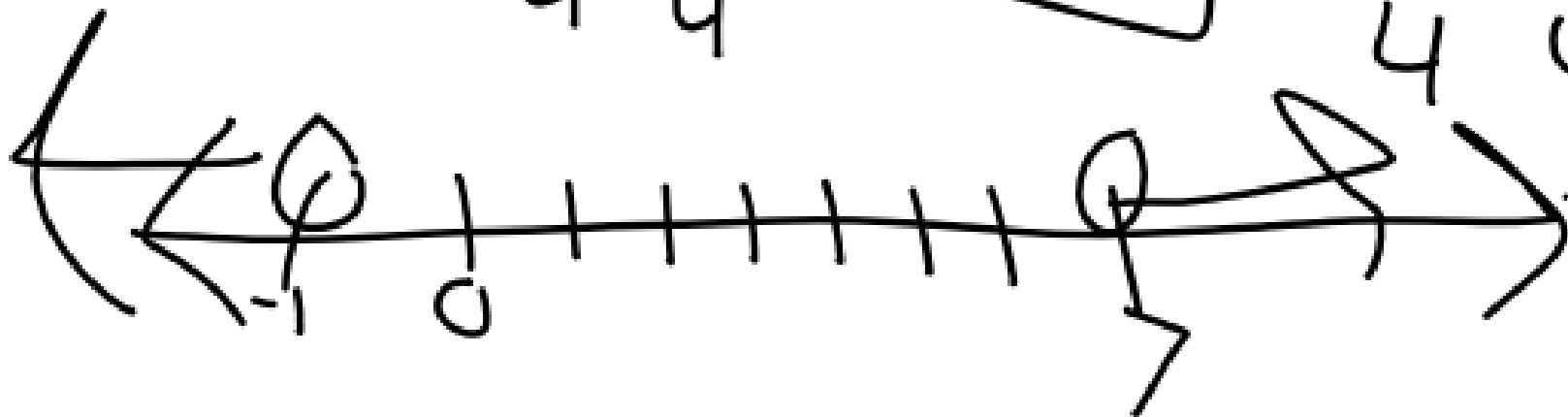
$$\begin{array}{c} -\frac{9}{2} \\ \leftarrow \text{Number Line} \rightarrow \\ -5 \quad -4 \quad -3 \quad -2 \quad -1 \quad 0 \quad 1 \quad 2 \quad 3 \end{array}$$

Ex 2: Solve and Graph: $|4n - 12| > 16$

$$4n - 12 > 16 \quad \text{or} \quad 4n - 12 < -16$$

$+12 \quad +12 \qquad \qquad \qquad +12 \quad +12$

$$\frac{4n}{4} > \frac{28}{4} \quad \boxed{n > 7 \text{ or } n < -1} \quad \frac{4n}{4} < \frac{-4}{4}$$



Ex 3: Solve and Graph: $|\frac{1}{2}x - 1| < 3$

$$\frac{1}{2}x - 1 < 3$$

$$\frac{1}{2}x < 4$$

$$(2) \frac{1}{2}x < 4$$

$$x < 8$$

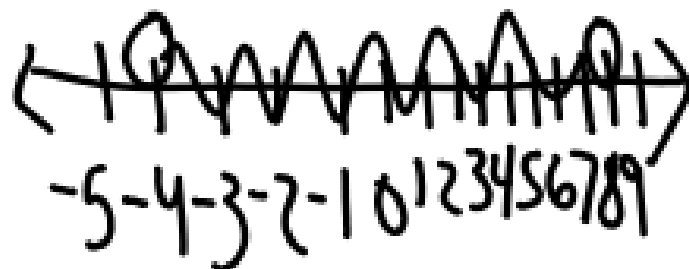
$$\frac{1}{2}x - 1 > -3$$

$$\frac{1}{2}x > -2$$

$$(2) \frac{1}{2}x > -2$$

$$x > -4$$

$$-4 < x < 8$$



Homework: p.54 #47-58